Listing of Claims

1.   (Currently Amended) A device for hiding information in a text having at least one sentence, comprising

~~means for providing the text;~~

an analyzer ~~means~~ for linguistically analyzing the text to produce text components, the text components being components of the sentence and the sentence, in addition to at least one additional component, having exactly one predicate as component;

~~means~~ a processor for determining a plurality of formulation alternatives for the text, wherein the processor is operative to determine the plurality of formulation alternatives

-      by varying the order of the text components itself,

-      by ascertaining synonyms for the text components and varying the order of the synonyms for the text components, or

–   by ascertaining synonyms for at least one text component and varying the order of a synonym for the at least one text component and of another text component of the sentence,

wherein the plurality of formulation alternatives are such that ~~with~~ every formulation alternative ~~being~~ is grammatically correct for the text and ~~having~~ has essentially the same meaning as the text, and that ~~with~~ every order of text components ~~sequence~~ and every synonym ascertained ~~having~~ has specific partial information allocated thereto;

~~means~~ a selector for selecting a formulation alternative from the plurality of formulation alternatives in such a manner that the partial information that is allocated

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to the selected formulation alternative corresponds at least to part of the information to be hidden; and

means-an output interface for outputting a selected the-formulation alternative that formirngs a modified text, with said information to be hidden-being hidden in said modified text.

2.   (Currently Amended) A device according to claim 1,

wherein the means for linguistically analyzing-analyzer is a parser, in particular a highly lexicalized, unification-based parser and specifically an HPSG parser.

3.   (Currently Amended)A device according to claim 1,

wherein the means for determining a plurality of formulation alternativesprocessor comprises a dictionary/grammar stage such that grammatically correct formulation alternatives are provided.

4.   (Currently Amended) A device according to claim 3,

wherein the dictionary/grammar stage has stored therein synonyms for text components as well unequivocal partial information for each synonym, the partial information including such asat least one of syntactic, semantic, contextual and statistic information.

5.   (Currently Amended)A device according to claim 1,

wherein each sequence of the text components and each synonym ascertained has a weighting allocated thereto as partial information, said weighting being determined such that all weightings for the sequence and the synonyms together, respectively, yield a probability of 1, and

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wherein the ~~means for selecting~~ selector is arranged to select one formulation alternative each in accordance with the rules of arithmetic decoding, controlled by the secret data that are understood as coded data.

6. (Original) A device according to claim 1,

wherein the partial information is in the form of Huffman code words, wherein the following equation holds:

$$\sum_{i=1}^{n} 2^{-l_i} = 1.0$$

in which li is the length in bit of the ith Huffman code word and n is the number of Huffman code words of a context, wherein all synonyms for a text component, inclusive of the text component, together constitute a context of their own, wherein all different sequences of text components, inclusive of the sequence of the text components in the text, constitute a context of their own, such that any arbitrary information to be hidden constitutes a stream of valid Huffman code words.

7. (Currently Amended) A device according to claim 5,

wherein the information to be hidden comprises a bit sequence, wherein the ~~means for selecting~~ selector is arranged to take as many bits from the beginning of the bit sequence until the number constituted by these bits is unequivocally within a specific one of the probability intervals determined by said weightings, whereupon said ~~means for selecting~~ selector selects that formulation alternative that corresponds to the weighting allocated to the specific probability interval, whereupon said ~~means for selecting~~ selector carries out additional interval interleaving in order to select the next formulation alternative.

8. (Currently Amended) A device according to claim 6,

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wherein the ~~means-for-selecting~~ selector is arranged to perform Huffman decoding, said ~~means~~ selector successively accessing various Huffman code contexts selected by the text components from a number of formulation alternatives provided by said ~~means-for-determining-a-plurality-of-formulation-alternatives~~ processor, with the input to Huffman decoding being the information to be hidden and with the output from Huffman decoding being the modified text.

9. (Original) A device according to claim 3,
wherein each text component comprises at least one word, and wherein the synonyms for each word are stored in the dictionary/grammar stage together with the corresponding partial information, whereas the partial information for each different sequence of text components is predetermined in accordance with modelling of real linguistic laws by declarative rules, constraints or fixed implementations in software.

10. (Currently Amended) A device according to claim 9,
wherein the ~~means-for-selecting~~ selector is arranged to utilize a first section of the information to be hidden for the selection of the sequence of the text components and the subsequent sections for the selection of the synonyms, and wherein the sequence of the selected synonyms is a sequence selected from one or several linguistically possible sequences and is independent of the sequence of the text components in the text.

11. (Currently Amended) A device according to claim 1, further comprising:

~~means~~ an encryptor for encrypting ~~and/or~~ a compressor for compressing the information to be hidden, whereby encrypted ~~and/or~~ compressed information to be hidden is produced which is adapted to be fed to said ~~means-for-selecting~~ selector.

12. (Currently Amended) A device according to claim 1,

wherein the ~~means-for-linguistically-analyzing~~ analyzer is arranged to deliver no text components for which the correctness of the reformulation cannot be guaranteed

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and/or wherein the ~~means for determining formulation alternatives~~processor is arranged to offer only such formulation alternatives for which it is ensured that the analysis thereof can yield again the same sentence of formulation alternatives.

13. (Currently Amended) A device according to claim 1,

wherein there is public text and secret data, the device comprising a control ~~means~~ler arranged to supply the information of the secret data to said ~~means for selecting~~selector, such that the same are hidden in the public text by modification of the public text.

14. (Currently Amended) A device according to claim 13,

wherein the statistics used for compression ~~and/or~~or encryption are dependent on the public text so that conformities of data fragments in the public text and the secret data are utilized for efficient compression.

15. (Currently Amended) A device according to claim 1,

wherein the ~~means for determining the formulation alternatives~~processor is controllable via the partial information in order to maintain a specific style, in particular to prefer or exclude certain formulation alternatives, ~~such as e.g.~~the certain formulation alternatives including at least one of certain words, specific lengths of sentences, the kind of language complexity, the language level, the kind of syntax and word position models, the perspective of narration, the ethnic focus with respect to the origin of the words the modified text is supposed to have, which list of words to be avoided should be used, how presumed errors in the text are to be handled and whether new errors may be built in.

16. (Currently Amended) A device according to claim 1,

wherein the processor is operative to have a predetermined similarity threshold ~~can be predetermined such that the means for determining formulation alternatives~~, and

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wherein the processor is operative to determines similar formulation variants for the text, when the semantic differences of which the formulation variants with respect to the an original alternative are below above the similarity threshold, and

wherein the processor is operative to whereas reject formulation alternatives having the semantic differences of which with respect to the original alternative which are above below the similarity threshold are rejected.

17.   (Currently Amended) A device according to claim 1516,

wherein the amount of text is limited, with the similarity threshold being dimensioned such that just the entire information to be hidden can be accommodated in the limited amount of text.

18.   (Currently Amended) A device according to claim 1,

wherein the means for determining a plurality of formulation alternativesprocessor is arranged to dynamically determine the formulation alternatives and to dynamically produce the partial information allocated to each formulation alternative.

19.   (Currently Amended) A device according to claim 1,
wherein the means for determining a plurality of formulation alternativesprocessor is arranged to output only that formulation alternative from the plurality of formulation alternatives that is selected by the means for selecting selector on the basis of the information to be hidden.

20.   (Currently Amended) A device for extracting information hidden in a modified text, the modified text having at least one sentence, comprising:

means for providing the modified text;

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an analyzer means-for linguistically analyzing the modified text to produce text components of the modified text, the text components being components of the sentence and the sentence, in addition to at least one additional component, having exactly one predicate as component;

means-a producer for producing partial information allocated to the sequence of the text components and, in case the modified text has information hidden in linguistic meanings of the text components, to the linguistic meanings of the text components, said means-for-producing-producer partial-informationbeing operative to producing produce the same partial information which, in-when hiding the information to produce the modified text, was allocated to the sequence of text components and optionally to the linguistic meanings of the text components;

means-a combiner for combining the partial information that was produced for the modified text by said means-for-producing-producerpartial-information, in order to obtain the information hidden in the modified text; and

means-an output interface for outputting the hidden information.

21. (Currently Amended) A device according to claim 20,

wherein the partial information is in the form of weightings, with said means-for-combining-combiner the-partial-information-carrying out arithmetic coding for extracting the hidden information.

22. (Currently Amended) A device according to claim 20,

wherein said partial information is in the form of simple or canonical, in particular prefix-free, Huffman code words, wherein said means-for-combining-combinerthe partial-informationis operative to carries-carry out Huffman coding, in which the code contexts used for Huffman coding are selected by said means-for-producing producer and correspond to the code contexts that were utilized in-when hiding information.

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23.   (Currently Amended) A device according to claim 20,

wherein the partial information that was used in hiding first relates to the sequence of the text components and thereafter to the synonyms of the text components in a predetermined sequence, and wherein said ~~means-for-combining~~ combiner ~~the partial information~~ is arranged to derive from the sequence of the text components of the modified text firstly the partial information relating to the sequence and then, on the basis of a predetermined sequence of the text components, to successively derive the partial information allocated to the individual text components.

24.   (Currently Amended) A device according to claim 20,

wherein said ~~means-for-producing~~ producer ~~partial-information~~ further comprises:

~~means-~~ a processor for determining a plurality of formulation alternatives for the modified text by varying the sequence of the text components ~~and/~~ or by using synonyms or paraphrases for the text components, each formulation alternative being grammatically correct for the text and having substantially the same meaning as the text, with each sequence ~~and/~~ or each synonym or each paraphrase having specific partial information allocated thereto,

wherein said ~~means-for-producing~~ producer ~~partial-information~~ is arranged to access said ~~means-for-determining a plurality of formulation alternatives,~~ processor in order to retrieve the partial information relating to the sequence ~~and/~~ or the linguistic meaning of the text components of the modified text.

25.   (Currently Amended) A method for hiding information in a text having at least one sentence, comprising the following steps:

~~providing the text;~~

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linguistically analyzing the text to produce text components, the text components being components of the sentence and the sentence, in addition to at least one additional component, having exactly one predicate as component;

determining a plurality of formulation alternatives for the text

- by varying the order of the text components itself,

- by ascertaining synonyms for the text components and varying the order of the synonyms for the text components, or

- by ascertaining synonyms for at least one text component and varying the order of a synonym for the at least one text component and of another text component of the sentence,

with every formulation alternative being grammatically correct for the text and having essentially the same meaning as the text, with every order of text components sequence and every synonym ascertained having specific partial information allocated thereto;

selecting a formulation alternative from the plurality of formulation alternatives in such a manner that the partial information that is allocated to the selected formulation alternative corresponds to the information to be hidden; and

outputting the formulation alternatives selected in the step of selecting that to form a modified text, with said information to be hidden being contained in said modified text.

26. (Currently Amended) A method for extracting information hidden in a modified text, the modified text having at least one sentence, comprising the following steps:

providing the modified text;

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linguistically analyzing the modified text to produce text components of the modified text, the text components being components of the sentence and the sentence, in addition to at least one additional component, having exactly one predicate as component;

producing partial information allocated to the sequence of the text components and to the linguistic meanings of the text components, with the same partial information being produced which, in hiding the information to produce the modified text, was allocated to the sequence of text components and, in case the modified text has information hidden in linguistic meanings of the text components, was allocated to the linguistic meanings of the text components;

combining the partial information that was produced for the modified text by said step of producing partial information, in order to obtain the information hidden in the modified text; and

outputting the hidden information.

27. (Currently Amended) A device according to claim 1 or 20,
wherein said ~~means for determining formulation alternatives~~processor or said ~~means for producing~~producer~~partial information~~ is arranged to utilize a word memory in the form of a tree or graph consisting of (a) full word forms, i.e. inflected words which then are correlated to other inflected words or (b) morphologic syntactic breaking down of the words in accordance with inflection classes, and in particular splitting into word prefixes, radices and suffixes, in which only the word radices or word prefix/word radix combinations are explicitly correlated as synonyms and the respective inflected forms are analyzed in accordance with the current demand in the respective word present on the basis of inflection data, and are generated correspondingly for a selected synonym.

28. (Currently Amended) A device according to claim 27,

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~~characterized in that~~<u>wherein</u> references to synonyms are organized either as (a) chain of synonymous meanings of a word that firstly make reference to each other in ring-like -manner and secondly are ordered implicitly by an order regulation, such as the lexical sequence or arrangement in accordance with the probability of occurrence, or explicitly by a characterization of the rank of one or more elements, or (b) as group of words considered to be synonymous or as references to the synonyms with the property that reference is made inversely to this group as well from the synonyms concerned or that this group is stored as value of a synonym.

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